SEQUENCE LISTING

<110> Raghuram Kalluri

<120> ANTI-ANGIOGENIC PROTEINS AND FRAGMENTS
AND METHODS OF USE THEREOF

<130> 1440.1027-016

<150> PCT/US01/00565
<151> 2001-01-08

<150> US 09/543,371
<151> 2000-04-04

<150> US 09/335,224
<151> 1999-06-17

<150> US 60/126,175
<151> 1999-03-25

<150> US 60/089,689
<151> 1998-06-17

<150> US 09/479,118
<151> 2000-01-07

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<151> 2000-07-21

<160> 58

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<210> 1
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<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)...(687)

<400> 1

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Ser Val Asp His Gly Phe Leu Val Thr Arg His Ser Gln Thr Ile Asp
 1               5                  10                  15

gac cca cag tgt cct tct ggg acc aaa att ctt tac cac ggg tac tct       96
Asp Pro Gln Cys Pro Ser Gly Thr Lys Ile Leu Tyr His Gly Tyr Ser
             20                  25                  30

ttg ctc tac gtg caa ggc aat gaa cgg gcc cat gga cag gac ttg ggc      144
Leu Leu Tyr Val Gln Gly Asn Glu Arg Ala His Gly Gln Asp Leu Gly
         35                  40                  45
```

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acg gcc ggc agc tgc ctg cgc aag ttc agc aca atg ccc ttc ctg ttc      192
Thr Ala Gly Ser Cys Leu Arg Lys Phe Ser Thr Met Pro Phe Leu Phe
     50                  55                  60

tgc aat att aac aac gtg tgc aac ttt gca tca cga aat gac tac tcg      240
Cys Asn Ile Asn Asn Val Cys Asn Phe Ala Ser Arg Asn Asp Tyr Ser
 65                  70                  75                  80

tac tgg ctg tcc acc cct gag ccc atg ccc atg tca atg gca ccc atc      288
Tyr Trp Leu Ser Thr Pro Glu Pro Met Pro Met Ser Met Ala Pro Ile
                 85                  90                  95

acg ggg gaa aac ata aga cca ttt att agt agg tgt gct gtg tgt gag      336
Thr Gly Glu Asn Ile Arg Pro Phe Ile Ser Arg Cys Ala Val Cys Glu
            100                 105                 110

gcg cct gcc atg gtg atg gcc gtg cac agc cag acc att cag atc cca      384
Ala Pro Ala Met Val Met Ala Val His Ser Gln Thr Ile Gln Ile Pro
        115                 120                 125

ccg tgc ccc agc ggg tgg tcc tcg ctg tgg atc ggc tac tct ttt gtg      432
Pro Cys Pro Ser Gly Trp Ser Ser Leu Trp Ile Gly Tyr Ser Phe Val
    130                 135                 140

atg cac acc agc gct ggt gca gaa ggc tct ggc caa gcc ctg gcg tcc      480
Met His Thr Ser Ala Gly Ala Glu Gly Ser Gly Gln Ala Leu Ala Ser
145                 150                 155                 160

ccc ggc tcc tgc ctg gag gag ttt aga agt gcg cca ttc atc gag tgt      528
Pro Gly Ser Cys Leu Glu Glu Phe Arg Ser Ala Pro Phe Ile Glu Cys
                165                 170                 175

cac ggc cgt ggg acc tgc aat tac tac gca aac gct tac agc ttt tgg      576
His Gly Arg Gly Thr Cys Asn Tyr Tyr Ala Asn Ala Tyr Ser Phe Trp
            180                 185                 190

ctc gcc acc ata gag agg agc gag atg ttc aag aag cct acg ccg tcc      624
Leu Ala Thr Ile Glu Arg Ser Glu Met Phe Lys Lys Pro Thr Pro Ser
        195                 200                 205

acc ttg aag gca ggg gag ctg cgc acg cac gtc agc cgc tgc caa gtc      672
Thr Leu Lys Ala Gly Glu Leu Arg Thr His Val Ser Arg Cys Gln Val
    210                 215                 220

tgt atg aga aga aca taa                                             690
Cys Met Arg Arg Thr
225
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<210> 2
<211> 229
<212> PRT
<213> Homo sapiens

<400> 2

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Ser Val Asp His Gly Phe Leu Val Thr Arg His Ser Gln Thr Ile Asp
 1               5                  10                  15
Asp Pro Gln Cys Pro Ser Gly Thr Lys Ile Leu Tyr His Gly Tyr Ser
            20                  25                  30
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Leu Leu Tyr Val Gln Gly Asn Glu Arg Ala His Gly Gln Asp Leu Gly
35 40 45
Thr Ala Gly Ser Cys Leu Arg Lys Phe Ser Thr Met Pro Phe Leu Phe
50 55 60
Cys Asn Ile Asn Asn Val Cys Asn Phe Ala Ser Arg Asn Asp Tyr Ser
65 70 75 80
Tyr Trp Leu Ser Thr Pro Glu Pro Met Pro Met Ser Met Ala Pro Ile
85 90 95
Thr Gly Glu Asn Ile Arg Pro Phe Ile Ser Arg Cys Ala Val Cys Glu
100 105 110
Ala Pro Ala Met Val Met Ala Val His Ser Gln Thr Ile Gln Ile Pro
115 120 125
Pro Cys Pro Ser Gly Trp Ser Ser Leu Trp Ile Gly Tyr Ser Phe Val
130 135 140
Met His Thr Ser Ala Gly Ala Glu Gly Ser Gly Gln Ala Leu Ala Ser
145 150 155 160
Pro Gly Ser Cys Leu Glu Glu Phe Arg Ser Ala Pro Phe Ile Glu Cys
165 170 175
His Gly Arg Gly Thr Cys Asn Tyr Tyr Ala Asn Ala Tyr Ser Phe Trp
180 185 190
Leu Ala Thr Ile Glu Arg Ser Glu Met Phe Lys Lys Pro Thr Pro Ser
195 200 205
Thr Leu Lys Ala Gly Glu Leu Arg Thr His Val Ser Arg Cys Gln Val
210 215 220
Cys Met Arg Arg Thr
225

<210> 3
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> pET22b(+) forward oligonucleotide primer for Arresten

<400> 3
cgggatcctt ctgttgatca cggcttc 27

<210> 4
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> pET22b(+) reverse oligonuceotide primer for Arresten

<400> 4
cccaagcttt gttcttctca tacagac 27

<210> 5
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<212> DNA
<213> Homo sapiens

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<222> (1)...(681)

<400> 5

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Val Ser Ile Gly Tyr Leu Leu Val Lys His Ser Gln Thr Asp Gln Glu
 1               5                  10                  15

ccc atg tgc ccg gtg ggc atg aac aaa ctc tgg agt gga tac agc ctg        96
Pro Met Cys Pro Val Gly Met Asn Lys Leu Trp Ser Gly Tyr Ser Leu
            20                  25                  30

ctg tac ttc gag ggc cag gag aag gcg cac aac cag gac ctg ggg ctg       144
Leu Tyr Phe Glu Gly Gln Glu Lys Ala His Asn Gln Asp Leu Gly Leu
        35                  40                  45

gcg ggc tcc tgc ctg gcg cgg ttc agc acc atg ccc ttc ctg tac tgc       192
Ala Gly Ser Cys Leu Ala Arg Phe Ser Thr Met Pro Phe Leu Tyr Cys
    50                  55                  60

aac cct ggt gat gtc tgc tac tat gcc agc cgg aac gac aag tcc tac       240
Asn Pro Gly Asp Val Cys Tyr Tyr Ala Ser Arg Asn Asp Lys Ser Tyr
65                  70                  75                  80

tgg ctc tct acc act gcg ccg ctg ccc atg atg ccc gtg gcc gag gac       288
Trp Leu Ser Thr Thr Ala Pro Leu Pro Met Met Pro Val Ala Glu Asp
                85                  90                  95

gag atc aag ccc tac atc agc cgc tgt tct gtg tgt gag gcc ccg gcc       336
Glu Ile Lys Pro Tyr Ile Ser Arg Cys Ser Val Cys Glu Ala Pro Ala
            100                 105                 110

atc gcc atc gcg gtc cac agt cag gat gtc tcc atc cca cac tgc cca       384
Ile Ala Ile Ala Val His Ser Gln Asp Val Ser Ile Pro His Cys Pro
        115                 120                 125

gct ggg tgg cgg agt ttg tgg atc gga tat tcc ttc ctc atg cac acg       432
Ala Gly Trp Arg Ser Leu Trp Ile Gly Tyr Ser Phe Leu Met His Thr
    130                 135                 140

gcg gcg gga gac gaa ggc ggt ggc caa tca ctg gtg tca ccg ggc agc       480
Ala Ala Gly Asp Glu Gly Gly Gly Gln Ser Leu Val Ser Pro Gly Ser
145                 150                 155                 160

tgt cta gag gac ttc cgc gcc aca cca ttc atc gaa tgc aat gga ggc       528
Cys Leu Glu Asp Phe Arg Ala Thr Pro Phe Ile Glu Cys Asn Gly Gly
                165                 170                 175

cgc ggc acc tgc cac tac tac gcc aac aag tac agc ttc tgg ctg acc       576
Arg Gly Thr Cys His Tyr Tyr Ala Asn Lys Tyr Ser Phe Trp Leu Thr
            180                 185                 190

acc att ccc gag cag agc ttc cag ggc tcg ccc tcc gcc gac acg ctc       624
Thr Ile Pro Glu Gln Ser Phe Gln Gly Ser Pro Ser Ala Asp Thr Leu
        195                 200                 205

aag gcc ggc ctc atc cgc aca cac atc agc cgc tgc cag gtg tgc atg       672
Lys Ala Gly Leu Ile Arg Thr His Ile Ser Arg Cys Gln Val Cys Met
    210                 215                 220

aag aac ctg tga                                                      684
Lys Asn Leu
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225

<210> 6
<211> 227
<212> PRT
<213> Homo sapiens

<400> 6

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			20					25					30		
Leu	Tyr	Phe	Glu	Gly	Gln	Glu	Lys	Ala	His	Asn	Gln	Asp	Leu	Gly	Leu
		35					40					45			
Ala	Gly	Ser	Cys	Leu	Ala	Arg	Phe	Ser	Thr	Met	Pro	Phe	Leu	Tyr	Cys
	50					55					60				
Asn	Pro	Gly	Asp	Val	Cys	Tyr	Tyr	Ala	Ser	Arg	Asn	Asp	Lys	Ser	Tyr
65					70					75					80
Trp	Leu	Ser	Thr	Thr	Ala	Pro	Leu	Pro	Met	Met	Pro	Val	Ala	Glu	Asp
				85					90					95	
Glu	Ile	Lys	Pro	Tyr	Ile	Ser	Arg	Cys	Ser	Val	Cys	Glu	Ala	Pro	Ala
			100					105					110		
Ile	Ala	Ile	Ala	Val	His	Ser	Gln	Asp	Val	Ser	Ile	Pro	His	Cys	Pro
		115					120					125			
Ala	Gly	Trp	Arg	Ser	Leu	Trp	Ile	Gly	Tyr	Ser	Phe	Leu	Met	His	Thr
	130					135					140				
Ala	Ala	Gly	Asp	Glu	Gly	Gly	Gly	Gln	Ser	Leu	Val	Ser	Pro	Gly	Ser
145					150					155					160
Cys	Leu	Glu	Asp	Phe	Arg	Ala	Thr	Pro	Phe	Ile	Glu	Cys	Asn	Gly	Gly
				165					170					175	
Arg	Gly	Thr	Cys	His	Tyr	Tyr	Ala	Asn	Lys	Tyr	Ser	Phe	Trp	Leu	Thr
			180					185					190		
Thr	Ile	Pro	Glu	Gln	Ser	Phe	Gln	Gly	Ser	Pro	Ser	Ala	Asp	Thr	Leu
		195					200					205			
Lys	Ala	Gly	Leu	Ile	Arg	Thr	His	Ile	Ser	Arg	Cys	Gln	Val	Cys	Met
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<210> 7
<211> 27
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<213> Artificial Sequence

<220>
<223> pET22b(+) forward oligonucleotide primer for Canstatin

<400> 7
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<210> 8
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> pET22b(+) reverse oligonucleotide primer for Canstatin

<400> 8
cccaagcttc aggttcttca tgcacac 27

<210> 9
<211> 738
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)...(735)

<400> 9

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Pro Gly Leu Lys Gly Lys Arg Gly Asp Ser Gly Ser Pro Ala Thr Trp
 1               5                  10                  15

aca acg aga ggc ttt gtc ttc acc cga cac agt caa acc aca gca att   96
Thr Thr Arg Gly Phe Val Phe Thr Arg His Ser Gln Thr Thr Ala Ile
            20                  25                  30

cct tca tgt cca gag ggg aca gtg cca ctc tac agt ggg ttt tct ttt   144
Pro Ser Cys Pro Glu Gly Thr Val Pro Leu Tyr Ser Gly Phe Ser Phe
        35                  40                  45

ctt ttt gta caa gga aat caa cga gcc cac gga caa gac ctt gga act   192
Leu Phe Val Gln Gly Asn Gln Arg Ala His Gly Gln Asp Leu Gly Thr
    50                  55                  60

ctt ggc agc tgc ctg cag cga ttt acc aca atg cca ttc tta ttc tgc   240
Leu Gly Ser Cys Leu Gln Arg Phe Thr Thr Met Pro Phe Leu Phe Cys
65                  70                  75                  80

aat gtc aat gat gta tgt aat ttt gca tct cga aat gat tat tca tac   288
Asn Val Asn Asp Val Cys Asn Phe Ala Ser Arg Asn Asp Tyr Ser Tyr
                85                  90                  95

tgg ctg tca aca cca gct ctg atg cca atg aac atg gct ccc att act   336
Trp Leu Ser Thr Pro Ala Leu Met Pro Met Asn Met Ala Pro Ile Thr
            100                 105                 110

ggc aga gcc ctt gag cct tat ata agc aga tgc act gtt tgt gaa ggt   384
Gly Arg Ala Leu Glu Pro Tyr Ile Ser Arg Cys Thr Val Cys Glu Gly
        115                 120                 125

cct gcg atc gcc ata gcc gtt cac agc caa acc act gac att cct cca   432
Pro Ala Ile Ala Ile Ala Val His Ser Gln Thr Thr Asp Ile Pro Pro
    130                 135                 140

tgt cct cac ggc tgg att tct ctc tgg aaa gga ttt tca ttc atc atg   480
Cys Pro His Gly Trp Ile Ser Leu Trp Lys Gly Phe Ser Phe Ile Met
145                 150                 155                 160

ttc aca agt gca ggt tct gag ggc acc ggg caa gca ctg gcc tcc cct   528
Phe Thr Ser Ala Gly Ser Glu Gly Thr Gly Gln Ala Leu Ala Ser Pro
                165                 170                 175

ggc tcc tgc ctg gaa gaa ttc cga gcc agc cca ttt cta gaa tgt cat   576
Gly Ser Cys Leu Glu Glu Phe Arg Ala Ser Pro Phe Leu Glu Cys His
```

```
            180                 185                 190

gga aga gga acg tgc aac tac tat tca aat tcc tac agt ttc tgg ctg   624
Gly Arg Gly Thr Cys Asn Tyr Tyr Ser Asn Ser Tyr Ser Phe Trp Leu
        195                 200                 205

gct tca tta aac cca gaa aga atg ttc aga aag cct att cca tca act   672
Ala Ser Leu Asn Pro Glu Arg Met Phe Arg Lys Pro Ile Pro Ser Thr
    210                 215                 220

gtg aaa gct ggg gaa tta gaa aaa ata ata agt cgc tgt cag gtg tgc   720
Val Lys Ala Gly Glu Leu Glu Lys Ile Ile Ser Arg Cys Gln Val Cys
225                 230                 235                 240

atg aag aaa aga cac tga                                          738
Met Lys Lys Arg His
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<210> 10
<211> 245
<212> PRT
<213> Homo sapiens

<400> 10

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            20                  25                  30
Pro Ser Cys Pro Glu Gly Thr Val Pro Leu Tyr Ser Gly Phe Ser Phe
        35                  40                  45
Leu Phe Val Gln Gly Asn Gln Arg Ala His Gly Gln Asp Leu Gly Thr
    50                  55                  60
Leu Gly Ser Cys Leu Gln Arg Phe Thr Thr Met Pro Phe Leu Phe Cys
65                  70                  75                  80
Asn Val Asn Asp Val Cys Asn Phe Ala Ser Arg Asn Asp Tyr Ser Tyr
                85                  90                  95
Trp Leu Ser Thr Pro Ala Leu Met Pro Met Asn Met Ala Pro Ile Thr
            100                 105                 110
Gly Arg Ala Leu Glu Pro Tyr Ile Ser Arg Cys Thr Val Cys Glu Gly
        115                 120                 125
Pro Ala Ile Ala Ile Ala Val His Ser Gln Thr Thr Asp Ile Pro Pro
    130                 135                 140
Cys Pro His Gly Trp Ile Ser Leu Trp Lys Gly Phe Ser Phe Ile Met
145                 150                 155                 160
Phe Thr Ser Ala Gly Ser Glu Gly Thr Gly Gln Ala Leu Ala Ser Pro
                165                 170                 175
Gly Ser Cys Leu Glu Glu Phe Arg Ala Ser Pro Phe Leu Glu Cys His
            180                 185                 190
Gly Arg Gly Thr Cys Asn Tyr Tyr Ser Asn Ser Tyr Ser Phe Trp Leu
        195                 200                 205
Ala Ser Leu Asn Pro Glu Arg Met Phe Arg Lys Pro Ile Pro Ser Thr
    210                 215                 220
Val Lys Ala Gly Glu Leu Glu Lys Ile Ile Ser Arg Cys Gln Val Cys
225                 230                 235                 240
Met Lys Lys Arg His
                245
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<210> 11
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> pET22b(+) forward oligonucleotide primer for Tumstatin

<400> 11
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<210> 12
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> pET22b(+) reverse oligonucleotide primer for Tumstatin

<400> 12
cccaagcttt cagtgtcttt tcttcat 27

<210> 13
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Additional vector sequence added to protein

<400> 13
Met Asp Ile Gly Ile Asn Ser Asp
1 5

<210> 14
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Additional vector sequence added to protein

<400> 14
Lys Leu Ala Ala Ala Leu Glu
1 5

<210> 15
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> pPICZaA forward oligonucleotide primer for Arresten

<400> 15
ttcggaattc tctgttgatc acggcttc 28

<210> 16

<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> pPICZaA reverse oligonucleotide primer for
Arresten

<400> 16
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<210> 17
<211> 31
<212> DNA
<213> Artificial Sequence

<220>
<223> pPICZaA forward oligonucleotide primer for
Canstatin

<400> 17
ttcggaattc gtcagcatcg gctacctcct g 31

<210> 18
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> pPICZaA reverse oligonucleotide primer for
Canstatin

<400> 18
ggggtacccc caggttcttc atgcacacct gg 32

<210> 19
<211> 244
<212> PRT
<213> Artificial Sequence

<220>
<223> Tumstatin (amino acids 1-244)

<400> 19
Pro Gly Leu Lys Gly Lys Arg Gly Asp Ser Gly Ser Pro Ala Thr Trp
1 5 10 15
Thr Thr Arg Gly Phe Val Phe Thr Arg His Ser Gln Thr Thr Ala Ile
20 25 30
Pro Ser Cys Pro Glu Gly Thr Val Pro Leu Tyr Ser Gly Phe Ser Phe
35 40 45
Leu Phe Val Gln Gly Asn Gln Arg Ala His Gly Gln Asp Leu Gly Thr
50 55 60
Leu Gly Ser Cys Leu Gln Arg Phe Thr Thr Met Pro Phe Leu Phe Cys
65 70 75 80
Asn Val Asn Asp Val Cys Asn Phe Ala Ser Arg Asn Asp Tyr Ser Tyr
85 90 95
Trp Leu Ser Thr Pro Ala Leu Met Pro Met Asn Met Ala Pro Ile Thr
100 105 110
Gly Arg Ala Leu Glu Pro Tyr Ile Ser Arg Cys Thr Val Cys Glu Gly

```
        115                 120                 125
Pro Ala Ile Ala Ile Ala Val His Ser Gln Thr Thr Asp Ile Pro Pro
    130                 135                 140
Cys Pro His Gly Trp Ile Ser Leu Trp Lys Gly Phe Ser Phe Ile Met
145                 150                 155                 160
Phe Thr Ser Ala Gly Ser Glu Gly Thr Gly Gln Ala Leu Ala Ser Pro
                165                 170                 175
Gly Ser Cys Leu Glu Glu Phe Arg Ala Ser Pro Phe Leu Glu Cys His
            180                 185                 190
Gly Arg Gly Thr Cys Asn Tyr Tyr Ser Asn Ser Tyr Ser Phe Trp Leu
        195                 200                 205
Ala Ser Leu Asn Pro Glu Arg Met Phe Arg Lys Pro Ile Pro Ser Thr
    210                 215                 220
Val Lys Ala Gly Glu Leu Glu Lys Ile Ile Ser Arg Cys Gln Val Cys
225                 230                 235                 240
Met Lys Lys Arg
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<210> 20
<211> 124
<212> PRT
<213> Artificial Sequence

<220>
<223> Tumstatin 333 (amino acids 2-125 of SEQ ID NO:10)

<400> 20
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Gly Leu Lys Gly Lys Arg Gly Asp Ser Gly Ser Pro Ala Thr Trp Thr
 1               5                  10                  15
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            20                  25                  30
Ser Cys Pro Glu Gly Thr Val Pro Leu Tyr Ser Gly Phe Ser Phe Leu
        35                  40                  45
Phe Val Gln Gly Asn Gln Arg Ala His Gly Gln Asp Leu Gly Thr Leu
    50                  55                  60
Gly Ser Cys Leu Gln Arg Phe Thr Thr Met Pro Phe Leu Phe Cys Asn
65                  70                  75                  80
Val Asn Asp Val Cys Asn Phe Ala Ser Arg Asn Asp Tyr Ser Tyr Trp
                85                  90                  95
Leu Ser Thr Pro Ala Leu Met Pro Met Asn Met Ala Pro Ile Thr Gly
            100                 105                 110
Arg Ala Leu Glu Pro Tyr Ile Ser Arg Cys Thr Val
        115                 120
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<210> 21
<211> 119
<212> PRT
<213> Artificial Sequence

<220>
<223> Tumstatin 334 (amino acids 126-244 of SEQ ID NO:10)

<400> 21
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Cys Glu Gly Pro Ala Ile Ala Ile Ala Val His Ser Gln Thr Thr Asp
 1               5                  10                  15
Ile Pro Pro Cys Pro His Gly Trp Ile Ser Leu Trp Lys Gly Phe Ser
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            20                  25                  30
Phe Ile Met Phe Thr Ser Ala Gly Ser Glu Gly Thr Gly Gln Ala Leu
        35                  40                  45
Ala Ser Pro Gly Ser Cys Leu Glu Glu Phe Arg Ala Ser Pro Phe Leu
    50                  55                  60
Glu Cys His Gly Arg Gly Thr Cys Asn Tyr Tyr Ser Asn Ser Tyr Ser
65                  70                  75                  80
Phe Trp Leu Ala Ser Leu Asn Pro Glu Arg Met Phe Arg Lys Pro Ile
                85                  90                  95
Pro Ser Thr Val Lys Ala Gly Glu Leu Glu Lys Ile Ile Ser Arg Cys
            100                 105                 110
Gln Val Cys Met Lys Lys Arg
        115
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<210> 22
<211> 191
<212> PRT
<213> Artificial Sequence

<220>
<223> Tum-1 (Tumstatin N53) (amino acids 54-244 of SEQ ID NO:10)

<400> 22

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Asn Gln Arg Ala His Gly Gln Asp Leu Gly Thr Leu Gly Ser Cys Leu
 1                  5                  10                  15
Gln Arg Phe Thr Thr Met Pro Phe Leu Phe Cys Asn Val Asn Asp Val
            20                  25                  30
Cys Asn Phe Ala Ser Arg Asn Asp Tyr Ser Tyr Trp Leu Ser Thr Pro
        35                  40                  45
Ala Leu Met Pro Met Asn Met Ala Pro Ile Thr Gly Arg Ala Leu Glu
    50                  55                  60
Pro Tyr Ile Ser Arg Cys Thr Val Cys Glu Gly Pro Ala Ile Ala Ile
65                  70                  75                  80
Ala Val His Ser Gln Thr Thr Asp Ile Pro Pro Cys Pro His Gly Trp
                85                  90                  95
Ile Ser Leu Trp Lys Gly Phe Ser Phe Ile Met Phe Thr Ser Ala Gly
            100                 105                 110
Ser Glu Gly Thr Gly Gln Ala Leu Ala Ser Pro Gly Ser Cys Leu Glu
        115                 120                 125
Glu Phe Arg Ala Ser Pro Phe Leu Glu Cys His Gly Arg Gly Thr Cys
    130                 135                 140
Asn Tyr Tyr Ser Asn Ser Tyr Ser Phe Trp Leu Ala Ser Leu Asn Pro
145                 150                 155                 160
Glu Arg Met Phe Arg Lys Pro Ile Pro Ser Thr Val Lys Ala Gly Glu
                165                 170                 175
Leu Glu Lys Ile Ile Ser Arg Cys Gln Val Cys Met Lys Lys Arg
            180                 185                 190
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<210> 23
<211> 132
<212> PRT
<213> Artificial Sequence

<220>
<223> Tum-2 (amino acids 1-132 of SEQ ID NO:10)

<400> 23
Pro Gly Leu Lys Gly Lys Arg Gly Asp Ser Gly Ser Pro Ala Thr Trp
1 5 10 15
Thr Thr Arg Gly Phe Val Phe Thr Arg His Ser Gln Thr Thr Ala Ile
20 25 30
Pro Ser Cys Pro Glu Gly Thr Val Pro Leu Tyr Ser Gly Phe Ser Phe
35 40 45
Leu Phe Val Gln Gly Asn Gln Arg Ala His Gly Gln Asp Leu Gly Thr
50 55 60
Leu Gly Ser Cys Leu Gln Arg Phe Thr Thr Met Pro Phe Leu Phe Cys
65 70 75 80
Asn Val Asn Asp Val Cys Asn Phe Ala Ser Arg Asn Asp Tyr Ser Tyr
85 90 95
Trp Leu Ser Thr Pro Ala Leu Met Pro Met Asn Met Ala Pro Ile Thr
100 105 110
Gly Arg Ala Leu Glu Pro Tyr Ile Ser Arg Cys Thr Val Cys Glu Gly
115 120 125
Pro Ala Ile Ala
130

<210> 24
<211> 112
<212> PRT
<213> Artificial Sequence

<220>
<223> Tum-3 (amino acids 133-244 of SEQ ID NO:10)

<400> 24
Ile Ala Val His Ser Gln Thr Thr Asp Ile Pro Pro Cys Pro His Gly
1 5 10 15
Trp Ile Ser Leu Trp Lys Gly Phe Ser Phe Ile Met Phe Thr Ser Ala
20 25 30
Gly Ser Glu Gly Thr Gly Gln Ala Leu Ala Ser Pro Gly Ser Cys Leu
35 40 45
Glu Glu Phe Arg Ala Ser Pro Phe Leu Glu Cys His Gly Arg Gly Thr
50 55 60
Cys Asn Tyr Tyr Ser Asn Ser Tyr Ser Phe Trp Leu Ala Ser Leu Asn
65 70 75 80
Pro Glu Arg Met Phe Arg Lys Pro Ile Pro Ser Thr Val Lys Ala Gly
85 90 95
Glu Leu Glu Lys Ile Ile Ser Arg Cys Gln Val Cys Met Lys Lys Arg
100 105 110

<210> 25
<211> 64
<212> PRT
<213> Artificial Sequence

<220>
<223> Tum-4 (amino acids 181-244 of SEQ ID NO:10)

<400> 25
Glu Glu Phe Arg Ala Ser Pro Phe Leu Glu Cys His Gly Arg Gly Thr
1 5 10 15
Cys Asn Tyr Tyr Ser Asn Ser Tyr Ser Phe Trp Leu Ala Ser Leu Asn
20 25 30

Pro Glu Arg Met Phe Arg Lys Pro Ile Pro Ser Thr Val Lys Ala Gly
35 40 45
Glu Leu Glu Lys Ile Ile Ser Arg Cys Gln Val Cys Met Lys Lys Arg
50 55 60

<210> 26
<211> 79
<212> PRT
<213> Artificial Sequence

<220>
<223> Tum-5 (amino acids 54-132 of SEQ ID NO:10)

<400> 26
Asn Gln Arg Ala His Gly Gln Asp Leu Gly Thr Leu Gly Ser Cys Leu
1 5 10 15
Gln Arg Phe Thr Thr Met Pro Phe Leu Phe Cys Asn Val Asn Asp Val
20 25 30
Cys Asn Phe Ala Ser Arg Asn Asp Tyr Ser Tyr Trp Leu Ser Thr Pro
35 40 45
Ala Leu Met Pro Met Asn Met Ala Pro Ile Thr Gly Arg Ala Leu Glu
50 55 60
Pro Tyr Ile Ser Arg Cys Thr Val Cys Glu Gly Pro Ala Ile Ala
65 70 75

<210> 27
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> T1 (amino acids 1-20 of SEQ ID NO:10)

<400> 27
Pro Gly Leu Lys Gly Lys Arg Gly Asp Ser Gly Ser Pro Ala Thr Trp
1 5 10 15
Thr Thr Arg Gly
20

<210> 28
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> T2 (amino acids 54-73 of SEQ ID NO:10)

<400> 28
Asn Gln Arg Ala His Gly Gln Asp Leu Gly Thr Leu Gly Ser Cys Leu
1 5 10 15
Gln Arg Phe Thr
20

<210> 29
<211> 20

<212> PRT
<213> Artificial Sequence

<220>
<223> T3 (amino acids 69-88 of SEQ ID NO:10)

<400> 29
Leu Gln Arg Phe Thr Thr Met Pro Phe Leu Phe Cys Asn Val Asn Asp
 1   5   10   15
Val Cys Asn Phe
            20

<210> 30
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> T4 (amino acids 84-103 of SEQ ID NO:10)

<400> 30
Asp Val Cys Asn Phe Ala Ser Arg Asn Asp Tyr Ser Tyr Trp Leu Ser
 1   5   10   15
Thr Pro Ala Leu
            20

<210> 31
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> T5 (amino acids 99-117 of SEQ ID NO:10)

<400> 31
Ser Thr Pro Ala Leu Met Pro Met Asn Met Ala Pro Ile Thr Gly Arg
 1   5   10   15
Ala Leu Glu

<210> 32
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> T6 (amino acids 114-132 of SEQ ID NO:10)

<400> 32
Arg Ala Leu Glu Pro Tyr Ile Ser Arg Cys Thr Val Cys Glu Gly Pro
 1   5   10   15
Ala Ile Ala

<210> 33

<211> 88
<212> PRT
<213> Artificial Sequence

<220>
<223> Tumstatin-45-132 (amino acids 45-132 of SEQ ID NO:10)

<400> 33
Gly Phe Ser Phe Leu Phe Val Gln Gly Asn Gln Arg Ala His Gly Gln
1 5 10 15
Asp Leu Gly Thr Leu Gly Ser Cys Leu Gln Arg Phe Thr Thr Met Pro
20 25 30
Phe Leu Phe Cys Asn Val Asn Asp Val Cys Asn Phe Ala Ser Arg Asn
35 40 45
Asp Tyr Ser Tyr Trp Leu Ser Thr Pro Ala Leu Met Pro Met Asn Met
50 55 60
Ala Pro Ile Thr Gly Arg Ala Leu Glu Pro Tyr Ile Ser Arg Cys Thr
65 70 75 80
Val Cys Glu Gly Pro Ala Ile Ala
85

<210> 34
<211> 88
<212> PRT
<213> Artificial Sequence

<220>
<223> Tumstatin-5-126-C-A (amino acids 45-132 of SEQ ID NO:10; alanine has been substituted for the cysteine residue at position 126 of the full-length Tumstatin molecule)

<400> 34
Gly Phe Ser Phe Leu Phe Val Gln Gly Asn Gln Arg Ala His Gly Gln
1 5 10 15
Asp Leu Gly Thr Leu Gly Ser Cys Leu Gln Arg Phe Thr Thr Met Pro
20 25 30
Phe Leu Phe Cys Asn Val Asn Asp Val Cys Asn Phe Ala Ser Arg Asn
35 40 45
Asp Tyr Ser Tyr Trp Leu Ser Thr Pro Ala Leu Met Pro Met Asn Met
50 55 60
Ala Pro Ile Thr Gly Arg Ala Leu Glu Pro Tyr Ile Ser Arg Cys Thr
65 70 75 80
Val Ala Glu Gly Pro Ala Ile Ala
85

<210> 35
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic blocking peptide

<400> 35
Cys Asp Cys Arg Gly Asp Cys Phe Cys

1 5

<210> 36
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic blocking peptide

<400> 36
Cys Asn Gly Arg Cys
1 5

<210> 37
<211> 25
<212> PRT
<213> Artificial Sequence

<220>
<223> T7 (amino acids 74-98 of SEQ ID NO:10)

<400> 37
Thr Met Pro Phe Leu Phe Cys Asn Val Asn Asp Val Cys Asn Phe Ala
1 5 10 15
Ser Arg Asn Asp Tyr Ser Tyr Trp Leu
20 25

<210> 38
<211> 25
<212> PRT
<213> Artificial Sequence

<220>
<223> T7-mutant (amino acids 74-98 of SEQ ID NO:10; methionine has been substituted for the leucine residue at position 78 of the full-length Tumstatin molecule, and isoleucine has been substituted for valine at position 82, and asparagine has been substituted for aspartic acid at position 84)

<400> 38
Thr Met Pro Phe Met Phe Cys Asn Ile Asn Asn Val Cys Asn Phe Ala
1 5 10 15
Ser Arg Asn Asp Tyr Ser Tyr Trp Leu
20 25

<210> 39
<211> 27
<212> PRT
<213> Artificial Sequence

<220>
<223> T8 (amino acids 69-95 of SEQ ID NO:10; lysine has

been substituted for the leucine residue at position 69 of the full-length Tumstatin molecule)

<400> 39
Lys Gln Arg Phe Thr Thr Met Pro Phe Leu Phe Cys Asn Val Asn Asp
1 5 10 15
Val Cys Asn Phe Ala Ser Arg Asn Asp Tyr Ser
20 25

<210> 40
<211> 27
<212> PRT
<213> Artificial Sequence

<220>
<223> T8-3 (amino acids 69-95 of SEQ ID NO:10; lysine has been substituted for the leucine residue at position 69 of the full-length Tumstatin molecule, and serine has been substituted for the cysteine residues at positions 80 and 86)

<400> 40
Lys Gln Arg Phe Thr Thr Met Pro Phe Leu Phe Ser Asn Val Asn Asp
1 5 10 15
Val Ser Asn Phe Ala Ser Arg Asn Asp Tyr Ser
20 25

<210> 41
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> TP3 (amino acids 77-95 of SEQ ID NO:10; lysine has been substituted for the phenylalanine residue at position 77 of the full-length Tumstatin molecule, and cysteine has been substituted for the aspartic acid at position 84)

<400> 41
Lys Leu Phe Cys Asn Val Asn Cys Val Cys Asn Phe Ala Ser Arg Asn
1 5 10 15
Asp Tyr Ser

<210> 42
<211> 27
<212> PRT
<213> Artificial Sequence

<220>
<223> P2 (amino acids 69-95 of SEQ ID NO:10; lysine has been substituted for the leucine residue at position 69 of the full-length Tumstatin molecule, and aspartic acid has been substituted for the cysteine residues at positions 80 and 86)

<400> 42
Lys Gln Arg Phe Thr Thr Met Pro Phe Leu Phe Asp Asn Val Asn Asp
 1   5   10   15
Val Asp Asn Phe Ala Ser Arg Asn Asp Tyr Ser
            20   25

<210> 43
<211> 27
<212> PRT
<213> Artificial Sequence

<220>
<223> Scrambled peptide SP1

<400> 43
Ala Asn Met Ser Arg Asn Val Phe Phe Asp Cys Thr Ser Phe Pro Val
 1   5   10   15
Cys Gln Lys Phe Leu Asn Asp Thr Arg Asn Tyr
            20   25

<210> 44
<211> 27
<212> PRT
<213> Artificial Sequence

<220>
<223> Scrambled peptide SP2

<400> 44
Thr Phe Asn Cys Val Lys Asn Tyr Gln Arg Leu Asp Phe Thr Ser Arg
 1   5   10   15
Phe Val Met Asp Ser Cys Ala Asn Phe Pro Asn
            20   25

<210> 45
<211> 14
<212> PRT
<213> rtificial Sequence

<220>
<223> Generic peptide

<223> X at position 1 is a hydrogen or a peptidyl chain
      of 1 to 17 amino acids

<223> X at position 2 is F or K

<223> X at position 5 is C, S or D

<223> X at position 9 is D or C

<223> X at position 11 is C, S or D

<223> X at position 14 is a hydrogen or a peptidyl chain
      of 1 to 12 amino acids

<400> 45
Xaa Xaa Leu Phe Xaa Asn Val Asn Xaa Val Xaa Asn Phe Xaa
1 5 10

<210> 46
<211> 4
<212> PRT
<213> Artificial Sequence

<220>
<223> Generic peptide

<400> 46
Thr Thr Met Pro
1

<210> 47
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Generic peptide

<400> 47
Phe Thr Thr Met Pro
1 5

<210> 48
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Generic peptide

<400> 48
Arg Phe Thr Thr Met Pro
1 5

<210> 49
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Generic peptide

<400> 49
Gln Arg Phe Thr Thr Met Pro
1 5

<210> 50
<211> 8

<212> PRT
<213> Artificial Sequence

<220>
<223> Generic peptide

<400> 50
Leu Gln Arg Phe Thr Thr Met Pro
 1   5

<210> 51
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Generic peptide

<400> 51
Lys Gln Arg Phe Thr Thr Met Pro
 1   5

<210> 52
<211> 4
<212> PRT
<213> Artificial Sequence

<220>
<223> Generic peptide

<400> 52
Ala Ser Arg Asn
 1

<210> 53
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Generic peptide

<400> 53
Ala Ser Arg Asn Asp
 1   5

<210> 54
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Generic peptide

<400> 54

Ala Ser Arg Asn Asp Tyr
1 5

<210> 55
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Generic peptide

<400> 55
Ala Ser Arg Asn Asp Tyr Ser
1 5

<210> 56
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Generic peptide

<400> 56
Ala Ser Arg Asn Asp Tyr Ser Tyr
1 5

<210> 57
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Generic peptide

<400> 57
Ala Ser Arg Asn Asp Tyr Asp Tyr Trp
1 5

<210> 58
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Generic peptide

<400> 58
Ala Ser Arg Asn Asp Tyr Ser Tyr Trp Leu
1 5 10